I. *An Abſtract of the* Meteorological Diaries *communicated to the* Royal Society, *with Remarks upon them by* W. Derham, *D. D. Canon of* Windſor, *and F. R. S.*

PART I. Containing Meteorological Obſervations made at

Coventry, *Upminſter,* } 1707. | *New-England,* *Upminſter,* } 1715, 1716.

A TABLE ſhewing the Height of the *Mercury* in the Barometer, the Coaſt and Strength of the Winds, and the Weather, on the firſt Day of eight Months in the Years 1707 and 170$\frac{7}{8}$. Obſerved at *Coventry* in *Warwickſhire* by Mr. *H. Beighton*, F. R. S. and at *Upminſter* in *Eſſex*, by *W. Derham*, F. R. S.

	COVENTRY				UPMINSTER.				
Month.	Barom.		Winds.	Weather.	Barom.		Winds.	Clouds.	Weather.
	Inc.	Dec.			Inc.	Cent.			
July.	29.	2 25 4	S^2 SW^3 ^{2}	Cloudy with Sunſhine.	29.	39 36 52	S^2 W^7	S W SWbW	Showers and Stormy.
Aug.		5	W^1 NW^1 ^{1}	Fair Sunſhine Day.		58 51	W b S^0		Fair and ſome Clouds.
Sept.		15 25	SW^5 ^{4}	Rain. High Winds.		33 29 38	S b W^5 W b S^8	S S W	Storms with Showers.
Octob.		05 05	S W^3	Much Rain.		13 14 14	WSW^6 ^{7}		Stormy Day.
Nov.		85 85	W^1 W^1	Cloudy.		81 84 82	NW bW^1		Cloudy.
Decem.		05	S W^3	Rain. Warm.		21			
Jan.		05	E^2	Temperate and Miſty.		01 06	NNE^0		Cloudy dark Day.
Febr.		65	N^2	Clear. Cold with Snow.		62 59 52	NNE^3 ^{3}		Froſt and Snow wth Fair.

A TABLE ſhewing the Coaſting and Strength of the Winds and the Weather every firſt Day of the Month in the Year 1715, and the Quantity of Rain in that Month, obſerved at *Harvard-College* in *Cambridge* in *New-England*, by Mr. *Tho. Robie*; and the Height of the *Mercury* in the Barometer, the Coaſting and Strength of the Winds and Clouds, the Weather and Rain at the ſame Time at *Upminſter*, by *W. Derham*, F. R. S.

HARVARD-COLLEGE.				UPMINSTER.				
Month.	Winds.	Rain. Lib. Cent.	Weather.	Barom.	Winds.	Clouds.	Rain.	Weather.
Jan.	W N W W b N S	5. 17		30. 11 10 14	N E^{3} ^{2}		4. 31	Hard Froſt and Cloudy.
Febr.	S W^{1} S W^{3} W^{0}	12. 92	Hazy. Snow. Cloudy.	29. 75 30. 10	WSW^{7} ^{10}		3. 7	Stormy.
March.	W^{1} S W^{1} SWbW^{1}	5. 14	Hazy. Cloudy.	29. 40 48 40	ENE^{3} ^{4}		12. 53	Cloudy. Miſling. Rain.
April.	NWbW^{5}	12. 71	Snow.	65 60 46	S b W^{1} E^{3}	S.	13. 19	Fair with Cloudy.
May.	Calm. E^{3} E^{4}	13. 14	Froſt. Serene.	32 39 30	S b E^{4} S W^{2}		4. 66	Rain. Fairer.
June.	S W^{2} WNW^{0} S W^{1}	13. 63		69 69 72	NNW^{0} N W^{2}	S W	16. 34	Fair with Cloudy.
July.	NWbW^{3}	14. 42	Showery.	65 71 77	W^{1} N W^{1}		20. 00	Cloudy. Thunder and Rain.
Auguſt.	N W^{0}	9. 64	Serene and Pleaſant.	30 28 28	N W^{0}	S W.	20. 49	Fog. Rain. Fairer.
Sept.	N E^{0} E^{1} ^{0}	*Sept. and*	Fair.	55	S S W^{4}		9. 17	Fair. Rain.
Octob.		*Octob.* 30. 78		75 72 50	WSW^{0} ^{1}		14. 08	HoarForſt Fair. Rain.
Nov.	W^{0} N W^{1} N^{1}	7. 24	Fair with Cloudy.	54 54 38	S W^{0} W b N^{1}		8. 53	Rain. Cloudy.
Dec.	W^{3} WNW^{3} W^{1}	5. 83	Fair and Cold.				2. 55	

A TABLE of the like Obſervations in the Year 1716, as thoſe in the preceding Table, except the Rain in *New-England* which Mr. *Robie* omitted.

HARVARD-COLLEGE.				UPMINSTER.				
Month.	Wind.		Weather.	Barom.	Winds.	Clouds.	Rain. Lib. Cent.	Weather.
Jan.	N W^{2} N W^{2}		Cold and Clear.	29. 62 59 76	WbN^{0} NbW^{0}		8. 61	Thaw wth Miſling & Cloudy.
Febr.	NWbW^{1} N^{0} E^{0}		Cold hard Froſt.	30. 15 18 21	NNE^{2} ^{1}		1. 76	Black Clouds.
Mar.	E^{0} N^{0} N W^{1}		Rain. Fairer.	29. 42	WbN^{0}		1. 93	Fair.
April.	S E^{1} N W^{6}		Cloudy. Fair.	85 85 80	E b S^{1} E S E	S. S.	5. 04	Fair and Pleaſant.
May.	N^{0} E^{1} S^{2}		Fair.	30. 00 29. 97	N^{2}		9. 52	Fair warm Day.
June.			Rain.	94 98 30. 01	NNW^{1} N bE^{4}	N N W	8. 24	Cloudy. Rain. Fairer.
July.	N W^{1} ^{0}		Fair and Cool.	29. 91 92 90	N W^{0} W^{3}	N b E	4. 47	Fair Pleaſant Day.
Aug.				88 88 92	WNW^{1} N W^{4}	N W	2. 11	Cloudy. Fairer. Cloudy.
Sept.	S W^{2} ^{6} ^{4}		Fair and ſome Clouds.				9. 87	
Octob.	W^{1} S W^{2} S^{1}		Fair. Hoar-Froſt.	51 52 50	W b S^{0} ^{0}		15. 75	Cloſe dark Day. Rain.
Nov.	W^{1} WNW^{1} ^{1}		Fair and Pleaſant.				4. 41	
Dec.	N^{1} N E^{2}		Cold and Raw. Snow.	68 87	N bW^{2}		7. 16	Froſt and Fair.

REMARKS on the foregoing TABLES.

In that for the Year 1707.

I. I Obſerve there is a great Agreement between the *Barometers* at *Coventry* and *Upminſter*, in their *Riſing* and *Falling* near the ſame Time, at leaſt not many Hours before or after one another, and for the moſt Part in the ſame Proportion. Alſo when one is *Stationary*, the other is ſo too, eſpecially if of any Continuance: But at *Coventry* the *Mercury* is lower than at *Upminſter* about a tenth of an Inch, the Situation at *Coventry* being, I ſuppoſe, higher than that of *Upminſter* about 82 Feet, according to my Experiments in *Philoſ. Tranſ.* Numb. 236.

II. I obſerve alſo a greater Conformity between the Winds, than (conſidering the Cauſes of their perpetual Change) would be imagined. For although they may vary a Point or two, yet generally through all the eight Months, they tended nearly towards the ſame Point of the Compaſs, and changed in one Place as they did in the other; eſpecially when they blew ſtrongly, or were of ſome Continuance. I have obſerved, that a Storm in one Place is ſo in the other; of which the Diaries at large give many Examples; and in this Table of 1707, in the Months of *September* and *October*, where Mr. *Beighton* hath noted the Winds Strength to be three and four, it is about the ſame Strength with mine of five, ſix, ſeven and eight, I taking in more Degrees of the Strength of the Winds than he.

III. I obſerve alſo, that the Weather in each Place is for the moſt Part nearly the ſame.

IV. I have often obſerved, that the Falling of the Quickſilver in dark and cloudy Weather betokeneth Rain; but the Rain is always preceded with Fair Weather: And when the Fair comes, the Foul is not far off. And this chiefly happens, when the Wind is in any of the Eaſterly Points.

V. In *January* 170$\frac{6}{7}$, many were troubled with cuticular Eruptions, which itched much. After this the Meaſles were epidemical 'till the latter End of *May*.

VI. The Beginning of this Year being very dry, and often the Weather cold (as appears by my Tables at large) Hay was ſcarce, and became very dear.

VII. *July* 8, commonly called the *Hot-Thurſday*, was the hotteſt Day that hath happened ſince I began my Meteorological Obſervations. A young Man (once my Servant) working in Harveſt harder than ordinary, was overcome with the Heat, and died: And diverſe Horſes on the Road that Day, dropped down, and died alſo.

VIII. In *November* and *December* the Air being moiſt, and frequently cold, Coughs were epidemical with us.

IX. I hope I ſhall be excuſed if I go out of the Bounds of this Table, and obſerve that the unſeaſonable Froſts in *April* 1708 (particularly *April* 25th and 26th) blaſted the tender young Leaves and *Catkins* of the Oak, Wallnut-Tree, *&c.* which I take to be the Reaſon that few Acorns and Wallnuts were that Year. From whence it is a juſt Concluſion, That the *Catkins* are of greateſt uſe to the Fertility of ſuch Trees that bear them; but whether as a Male-Sperm I ſhall not determine.

X. This Month of *April* alſo Horſes were every where ſeized with dangerous Coughs; of which many died in *London*, and other Places, eſpecially ſuch as laboured on the Roads. I have great Reaſon to think theſe Colds were catching, becauſe my Horſes that went well to *London*, returned with great and ſudden Colds.

XI. *June* 11 (although it was the Day of the Summer Solſtice) was enſued with a very cold Night, my Thermometer deſcending nearly to the Point of an Hoar-Froſt.

REMARKS on the TABLES of 1715 and 1716.

The late ingenious Mr. *Robie*, at my Requeſt, was pleaſed to make, in *New-England*, *Meteorological Obſervations*, Morning, Noon and Night, to correſpond with mine at the ſame Time at *Upminſter*.

Theſe Obſervations he made in 1715, *&c.* to the End of 1722, and ordered them to be ſent to our *Royal Society*; and accordingly I received them, not long ſince, from his ingenious Succeſſor at *Harvard-College*, Mr. *Iſ. Greenwood*, and now preſent them, with my own, to the *Society*.

But by reaſon they are too long to be read at the *Society*'s Meetings, or to be inſerted in the *Tranſactions*, I have therefore made the foregoing Extract from them, together with ſome Obſervations of my own, which tally with them.

But I am ſorry that Mr. *Robie*'s Obſervations want thoſe of the Barometer and Thermometer: Neither of which

which Inſtruments was to be gotten in *New-England.* Could we have had thoſe Obſervations, they would have been of great uſe in ſeveral Phænomena of thoſe diſtant Places, which now I can only gueſs at: And,

I. I gueſs, that notwithſtanding *Harvard-College* is ten Degrees more South than *Upminſter* (it being, as Mr. *Robie* ſays, *in Lat.* 42 *Deg.* 25′ *North*, and *Longitude from* London 4 h 44′ *as corrected by the beſt Obſervations*, that I ſay) they have as *cold*, if not colder Seaſons than we have here.

II. Although the ordinary Agreement or Diſagreement of the Winds, deſerves no Remark, yet it may deſerve Obſervation, That when the Winds have continued long in one Point, they have nearly agreed in both Places, and eſpecially when they have been high, and ſtrong for ſome time. In which Caſe I have obſerved, that there have been ſome Days Difference in the coming of thoſe Winds, as if they were ſo many Days in their Paſſage from Place to Place.

And this Agreement of the Winds, together with that of the Aſcent and Deſcent of the Quickſilver before-mentioned, diverſe curious Obſervers have taken Notice of, as well as my ſelf, between diſtant Places, though not ſo far as *New-England*; as *Zurich*, *Paris*, *Lancaſhire* and *Upminſter*; as may be ſeen in the *Philoſoph. Tranſ.* particularly Numb. 208, 286, 297, and 321.

III. I obſerve, that they have in *New-England* many more *Parelij*, *Halo's*, *Lunar Rainbows*, and ſuch like Appearances: Alſo more *Earthquakes*, *unuſual Meteors*, *Thunder and Lightening* than we have.

IV. The

IV. The *Rain* in 1715 (which was the only Year in which Mr. *Robie* obſerved it) in the different Months, amounted to different Quantities; but in the whole Year, it was nearly the ſame as at *Upminſter*; that at *Harward-College* being 130,64 ℔, that at *Upminſter* 128,92 ℔. But conſidering that Mr. *Robie*'s *Tunnel* that received his Rain, was but 11½ Inches in Diameter, and mine exactly 12, therefore the Proportion of the *New-England* Rain may be accounted ſomewhat the greater.

V. I obſerved at *Upminſter*, that in *January* the Contagion which was very fatal among the *Black Cattle* about *London* the latter End of the laſt Year, came amongſt us, and deſtroyed many.

In *March* many were afflicted with *Head-aches*; and the *Small-Pox* was epidemical: And the Earth being very dry, the Ponds empty, and the Springs low, in that and the next Month there fell good Store of ſeaſonable Rain, as the Table for that Year ſhews, but not ſufficient to fill the Ponds. But in *June*, *July* and *Auguſt*, more Rain fell than was welcome; which filled the Ponds, but hurt the Hay, and Corn, and made the Ways as dirty as in Winter.

In the Summer this Year I had many Confirmations of ſome former Obſervations in my *Phyſico-Theology*, *Lib.* I. *Ch.* 3. *viz. That a cold Summer is commonly a wet one.* Which this Summer was, the Spirits in the Thermometer being often low, particularly near the Point of *Hoar-Froſt* on *Auguſt* 12.

In *January*, the following Year 1716, the River of *Thames* was frozen for ſeveral Miles, and particularly ſo intenſely at *London*, that whole Streets of Booths were erected on the Ice, Oxen roaſted, Coaches driven

driven, and many Diverſions exerciſed above Bridge. And ſo ſtrong was the Ice below Bridge, as to allow People to walk and skate at their Pleaſure thereon. But yet the Spirits in the Thermometer deſcended not all the while near ſo low, as on *December* 30, 1708.

In *Scotland* alſo (which in 170$\frac{8}{9}$ felt but little of that Year's ſevere Froſt) the Ice was ſtrong enough to bear the Horſe and Foot of the Armies.

And beyond Sea they ſuffered much; particularly in *Spain*, much Miſchief was done by the wild Beaſts, which were forced by the Froſt out of the Woods.

Among *Birds* I find the *Goldfinches* to have ſuffered much, having ſcarce ſeen one of them all the following Part of the Year; they being killed by the hard Weather, or driven to ſeek Food in other Parts.

On the —— Day of ———, the Wind was ſo violent, that the *Thames* was emptied from *London-Bridge* as far as ———, ſo that only a ſmall Rivulet of Water, no bigger than a Brook of 10 or 12 Foot over, remained; inſomuch, that People walked on the Bottom, and found Treaſure there.

In *November* and *December* Pleuriſies were frequent, and mortal in our Parts of *Eſſex*. The Weather was mild, open, dark, and damp for the moſt part, with now and then a cold Day or two.

Farther REMARKS from Mr. Robie's *Papers.*

On *February* 12, 171$\frac{5}{6}$, he notes an *Earthquake* to have been at *Salem Village*; and on *Octob.* 21

following the *Day was ſo dark, that People were forced to light Candles to eat their Dinners by.* Which could not be from an Eclipſe, the Solar Eclipſe being the 4th of that Month.

On *Feb.* 13, 171$\frac{6}{7}$, he obſerved an Immerſion of the firſt Satellite of *Jupiter*, at 10^{h} 48′ 17″; and on *Feb.* 8 I obſerved an Emerſion at 8^{h} 7′ 30″; according to which the Difference of *Longitude* between *Harvard-College* and *Upminſter* is 4^{h} 45′, and Mr. *Robie* ſays, that it is 4^{h} 44′ from *London*, by the lateſt and beſt Obſervations.

Sept. 23, 1717, Mr. *Robie* obſerved the Solar Eclipſe

The Beginning at 12^{h} 23′
The Middle at 1^{h} 47′ or thereabout.
The End at 3^{h} 5′ 10″ *p. M.*
About 9 Digits were Eclipſed.

Octob. 5 following he obſerved the *Southing* of the Moon, at 9^{h} 32′ *p. M.*

On *Feb.* 25, 171$\frac{7}{8}$, Mr. *Robie* ſaw the *Moon* cover *Aldebaran* at about 9^{h} 18′ *p. M.* and the Star to emerge at 10^{h} 20′ *p. M.* then by his Meridian Inſtrument (ſuch as I have deſcribed in *Philoſ. Tranſ.* Numb. 291) being 2′ too ſlow; ſo that 2′ are to be added to the Time mentioned.

March 10, 171$\frac{7}{8}$, Mr. *Robie* obſerved an Emerſion of the firſt Circumjovial at 10^{h} 45′ 35″.

Sept. 24, 1718, Mr. *Robie* obſerved the *Moon* to *South* at 9^{h} 38′, or thereabout: On the 25th at 10^{h} 22′ 32″ *p. M.* On the 26th at 11^{h} 26′ *p. M.*

Decemb. 5, a great *fiery Meteor* was ſeen in the Morning about Break of Day. And on the 9th, about half an Hour after Ten, in the S S W, he ſaw another, which made a Light like the Moon.

Dec. 19, the *Moon ſouthed* at $6^{h}\ 45'\ 45''$ *p. M.* On the 20th at $7^{h}\ 30'\ 56''$. On the 23d at $9^{h}\ 54'\ 5''$. On the 25th at $11^{h}\ 47'\ 33''$.

On *Jan.* 13, 171$\frac{8}{9}$, the firſt *Circumjovial* immerged at $10^{h}\ 35'$ *p. M.*

Jan. 17, The *Moon ſouthed* at $5^{h}\ 52'\ 1''$. On the 19th at $7^{h}\ 33'\ 1''$. On the 22d at $10^{h}\ 21'\ 40''$ *p. M.*

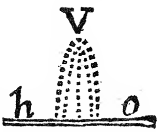
Feb. 16, *Moon ſouthed* at $6^{h}\ 15'\ 15''$: On the 19th at $8^{h}\ 59'\ 40''$: On the 21ſt at $10^{h}\ 54'\ 30''$ *p. M.*

On *Dec.* 11, 1719, a very unuſual *Meteor* was ſeen in the Evening.

On *Jan.* 8, 17$\frac{19}{20}$, Mr. *Robie* ſays an *Earthquake* was.

On *Nov.* 24, 1720, Mr. *Robie* obſerved a *Streaming* from the Northern Horizon; as I did on *Nov.* 22 before.

On *Dec.* 10, 1720, about 8^{h} *p. M.* Mr. *Robie* firſt ſaw the *Light* that ſtrikes up toward the *Pleiades*; and on *Jan.* 6 following, he found it was increaſed, and almoſt reached to the *Pleiades*. And *Dec.* 7, 1721, he obſerved the ſame; and on the 25th he hath given this Figure of it: *h o* is the Part next the Horizon; V the Point toward the *Pleiades*.



This *Glade of Light* is the ſame that Dr. *Childrey* mentions in his *Britan. Bacon.* under the Name of *Semita luminoſa*; and which I ſaw, and gave a Figure of in *Philoſ. Tranſ.* Numb. 305.

Obſervations of the Eclipſe *of the* Moon *on* June 28, 1721.

About Two in the Morning Mr. *Robie* viewed the *Moon* with his eight Foot Teleſcope, and ſhe was untouched.

Time Correct.

H.	′	″	
2	10	00	A thin Penumbra.
2	12	00	Shadow is plainly entered.
2	18	10	*Palus Mareotis* covered.
2	31	40	*Mons Porphyrites* touched.
2	34	20	—— —— —— covered.
2	47	10	Moon eclipſed about ſix Digits.
2	49	05	*Besbicus* juſt touched.
2	50	30	—— —— covered wholly.
2	53	40	*Byzantium* touched.
2	54	10	—— —— covered.
3	05	40	*Palus Meotis* touched.
3	18	30	Moon wholly covered.

There remained a Light on the Weſtern Side of the Moon for ſome Time.

About 3 h 50 in the Morning the Moon was wholly hid by the Haze, and coming on of Day-Light, that nothing could be ſeen of her; although from the Immerſion 'till now ſhe was viſible.

The Obſervations Mr. Robie *made on the* Solar Eclipſe, Nov. 27, 1722, *were as follows:*

H.	'	"	
7	27	00	He ſaw the Sun riſe eclipſed about four Digits on his ſupreme Vertex; to the S W the greateſt Part of the Shade lay.
			Then we could obſerve no more 'till
8	30	00	The Sun began to appear, and ſix Digits, or thereabouts, were eclipſed.
8	55	15	The Sun was eclipſed 4 ¾ neareſt; and then the Sun's Diameter was to the Moon's, as 1000 to 972.
9	00	15	Were hid 4½ nearly; and the Sun's Diameter was to the Moon's as 1000 to 975.
9	19	45	A little Spot on the Sun emerged.
9	25	45	I ſaw the Moon go off the Sun, and Mr. *Danforth* at the ſame Time: And Mr. *Appleton* at
9	25	20	

II. *The Deſcription of a new* Quadrant *for taking* Altitudes *without an Horizon, either at Sea or Land. Invented by Mr.* John Elton.

THIS Inſtrument contains four principal Parts, *viz.* a Frame, an Index, a Label, and a Shield; and theſe conſiſt of ſeveral Parts. (*Vid. Tab.*)

The